Internship proposals

The objective of the internship is to explore the potential of the blockchain technology for a decentralized market place. In more details, the idea is to imagine and develop a market place service (1) putting in relation service providers and customers in a trusted fashion, (2) generating the corresponding contract automatically. For example, the owner of a shop could find and hire automatically the driver with the most appropriate background. To do so, the market place should provide a decentralized execution, offer enough flexibility to address changing environment constraints, as well as strong partner trust.
So far, an experimental platform merging the blockchain, and a declarative langage has been developed to monitor processes in a general fashion. Thus the goal is to leverage this platform in the context of a market place.

Challenges to tackle:

- How to model a market place with a declarative approach?
- How to leverage the blockchain in this context ? What metrics should be tracked in the blockchain ? How to ensure privacy ? Or extrinsic data ?
- How to optimize the architecture of the existing experimental system to fit the needs of market places?

Deliverables:

- declarative modelization of a market place
- development of a proof of service in the context of logistics.
- optimized smart contract (*Hints: working with dual logic, adding role binding*)

Learning outcomes :

- understanding of the blockchain, and its use cases
- understanding of business process management systems
- webdevelopment: solidity (Ethereum smart contracts), react, html, js...

References :

Madsen, M.F., Gaub, M., Høgnason, T., Kirkbro, M.E., Slaats, T., Debois, S.: Collaboration among adversaries: distributed workflow execution on a blockchain. In: Symposium on Foundations and Applications of Blockchain. p. 8 (2018)

Falazi, G., Hahn, M., Breitenbücher, U., Leymann, F., Yussupov, V.: Process-based composition of permissioned and permissionless blockchain smart contracts. In: 2019 IEEE 23rd International Enterprise Distributed Object Computing Conference (EDOC). pp. 77–87 (2019). https://doi.org/10.1109/EDOC.2019.00019, ISSN: 2325-6362

Abeyratne, S.A., Monfared, R.P.: Blockchain ready manufacturing supply chain using distributed ledger. International Journal of Research in Engineering and Technology 5(9), 1–10 (2016)